1. (a) Find four different particular solutions to the following differential equation. Find one pair of solutions that are linearly independent.

\[ 9z^2 \frac{d^2 g}{dz^2} + 21z \frac{dg}{dz} + 4g = 0 \]

(b) For the linearly independent solutions \( g_1 \) and \( g_2 \) found in the previous problem, compute the Wronskian

\[ W(g_1, g_2) = \begin{vmatrix} g_1 & g_2 \\ \frac{dg_1}{dz} & \frac{dg_2}{dz} \end{vmatrix} \]

2. Use the method of undetermined coefficients to solve the following differential equations. Express the solutions in terms of functions that are real-valued in the region \( x > 0 \).

(a) \[ f'''(x) - 2f'(x) - 3f(x) = 3xe^{-x} \]

(b) \[ 4f'''(x) + \frac{65}{x^2} f(x) - 1 = 0 \]